United States Department of Agriculture **Forest Service** **Southwestern Region Forest Health Arizona Zone Office**

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Ms. Elouise Chichardlo
Regional Director
Bureau of Indian Affairs
PO Box 1060
Gallup, NM 87305

Dear Ms. Chichardlo;

On Wednesday December 14, 2005, Bobbe Fitzgibbon, Entomologist with our staff, met with Rose Delaney, Naomi Gibson and Luther Shirley in Window Rock.

Background

Rose Delaney called our Forest Health Office to request technical assistance regarding several Siberian elms in an historic housing area. The elms were planted in the area to provide a windbreak and shade for adjacent houses. The elms are very old and were experiencing an infestation of elm leaf beetle which has been defoliating the trees for the past 2 to 4 years. The trees also have dead branches which posed a hazard to residents and houses. Residents of the development were expressing concern about the condition of the trees. The grounds department responded to these concerns by pruning dead branches from some of the trees and completely removing others, Figure 1. While heart rot was not very apparent during Bobbe's site visit, our plant pathologist, Mary Lou Fairweather, saw indications of rot in photographs of the stumps which could have been more fully developed in the upper bole and larger branches of the trees, Figure 1.

Figure 1. Siberian elm within a residential area that have been pruned to remove dead branches (left photo). Photo on the right shows rot in a elm that had been felled recently.

Siberian elms (*Ulmus pumila*) were introduced from Asia and have spread widely because of their drought tolerance and ability to produce multiple seeds which sprout readily. They are common around the Four Corners region and are often planted in lines as windbreaks. Siberian elm is a rapidly-growing deciduous tree with a rounded canopy and somewhat drooping branches. It reaches 40 to 60 feet in height and the crown spread is 35 to 50 ft. The wood is fairly brittle and subject to damage during storms. In older trees, limbs split from the crotches. Most urban tree managers will not recommend this tree because of its susceptibility to breakage; however, some managers feel that improper pruning, including topping may be partially responsible for its weak-wooded reputation. This tree requires proper pruning to develop a strong structure.

The elm leaf beetle *(Xanthogaleruca (=Pyrrhalta) luteola)* was introduced into the eastern United States in 1834. Siberian elm is one of its preferred hosts. Elm leaf beetles are about .25 inches long, olive green with lateral black stripes at the elytral margins. Larvae are black and resemble ladybug larvae. They become a dull yellow or green after having fed. Adult females lay 400 to 800 eggs in clumps or irregular double rows of 5 to 25 eggs on the underside of the leaves. Larvae emerge from their eggs and feed for 2 to 3 weeks. Mature larvae crawl down the trees and pupate around the tree base. There are two generations per year, the first generation flies to the canopy and begins to feed and lay eggs; the second generation overwinters as adults. Elm leaf beetles have many natural enemies that regulate their populations including birds, toads, parasitic and predacious insects and diseases. However, when these natural controls are not sufficient to limit population growth, sometimes other forms of control are warranted.

Evaluation

The elm leaf beetle situation could not be evaluated at this time since the insect is in the overwintering stage of its lifecycle. Adult beetles would be hidden in bark crevices, woodpiles and structures. Elm leaf beetle can severely defoliate trees. The larvae skeletonize the leaves while the adults eat the entire leaf surface putting holes in the leaves. While defoliators can cause tree mortality, trees that are properly cared for can withstand multiple years of heavy defoliation.

Indications of rot were present in stumps and are suspected in residual trees. In addition, improper pruning of existing trees will lead to the development of branches with weak attachments and eventual failure. Since the trees are in a residential area, failure could cause human injury or structural damage.

Recommendations

A management plan should be developed for this historic area, including any necessary documentation for NEPA compliance. The plan should include management of the elm leaf beetle populations, proper management of the existing structurally sound elm and removal and replacement of hazard trees. Replacement trees should include native vegetation such as pinyon, juniper or Gambel oak, more suited to the area and that enhance the native grasses already in place. Other less drought tolerant native hardwoods could be planted; however, a regimen of watering would need to be developed for maintenance.

A hazard tree evaluation should be done within the area. Mary Lou Fairweather, from our staff, is available to provide training on hazard tree identification and documentation.

Proper pruning standards have been developed to preserve and enhance the structural integrity and functional value of trees. Pruning large structural limbs between nodes (branches) can lead to further stem decay and epicormic sprouts which grow into limbs quickly. These types of limbs are more prone to failure due to their precarious attachment. Pruning should be done in fall or winter and follow proper standards, removing the branch just outside of the branch bark ridge and collar. When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.

An integrated approach to managing the elm leaf beetles will include enhancing the health of the trees with proper watering and pruning as well as chemical controls. Elm leaf beetle populations fluctuate from year to year so population monitoring should be the first step each year to maintaining healthy elms. After a warm wet winter, treatment is less likely to be needed, however following a dry cold winter elm leaf beetle population are more likely to reach outbreak levels. If fall populations were low the previous year or chemical treatments were conducted, the need for treatment is unlikely. Monitoring for adult beetles should begin in April and continue on a weekly basis. If chemical injection is planned, use the abundance of eggs (treatment is indicated if 45 % of the terminal branches of the tree has beetle eggs) to determine if control is necessary. Injections should be done prior to egg hatch. If a foliar spray is planned, monitor the larval development. The spray should be timed when most of the eggs have hatched and the majority of the larvae are in an early larval stage or instar. Another treatment technique is to place a band with insecticide on the lower bole of the tree before the mature larvae climb down to pupate. This will not eliminate the damage from the first generation of beetles, but will reduce the populations of the second generation. A similar method is to cover the ground around the trees with boards, providing the insects an ideal place to rest and pupate. When most of the larvae are off the trees the boards can be removed and the pupae treated.

The use of pesticides has benefits and risks. The goal of an integrated program is to only use pesticides when insect populations indicate that severe tree damage will occur. Choose the pesticide that will kill the beetles with the least risk to people and the environment. Benefits can be maximized and risks minimized when pesticide labels are read and followed. Close attention should be paid to the directions for use and precautionary statements. The label contains both

instructions and limitations. It is a violation of both federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for its proper use.

If you have any questions about this report, other insect, disease or hazard tree issues, please feel free to contact either Bobbe Fitzgibbon (928-556-2072 or bfitzgibbon@fs.fed.us) or Mary Lou Fairweather at 928-556-2075 or mfairweather@fs.fed.us. The Forest Health Unit puts on an annual 3 day Insect and Disease Workshop for federal land managers and, when there is a demand, a Hazard Tree Workshop. Both of these trainings are available to your staff. Additionally our staff is available to assist the ID team working on NEPA documentation and public meetings.

Sincerely,

/s/ John Anhold
JOHN ANHOLD
Arizona Zone Leader Forest Health

cc: John Anhold
Debra Allen-Reid
MaryLou Fairweather
Joel McMillin
Rose Delaney
Naomi Gibson
Desmond Jones
Mike R Williams